

**REMARKS**

Claims 1, 3, 4, 6-7, 10-11 and 13-14 are amended to improve their form.

Claim 35 is added as a new claim. Support is found, for example, at page 12, line 20 of the specification as filed.

Upon entry of the Amendment, claims 1-35 will be all of the claims pending in the application. Of these, claims 17-34 are withdrawn from consideration.

**I. Response to Claim Rejections under 35 U.S.C. § 112, 2<sup>nd</sup> Paragraph**

Claims 1-16 are rejected under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph, as being indefinite.

Claim 1 is rejected as allegedly having “confusing antecedent basis” for the phrase “the softening point of a glass perform”. The Examiner further states that there is no antecedent basis for the recitation “the direction”.

Claim 1 is amended to recite “a softening point of the preform”, as suggested by the Examiner. Further, claim 1 is amended to recite “the inflow of the impurities”.

The Examiner states that claims 2 and 3 are unclear as to whether it is directed to a step of establishing or further limiting claim 1. Further, the Examiner states that there is no antecedent basis for the phrase “the outlet opening of the processed perform” in claim 3.

Applicants traverse the rejection. In the Amendment filed June 26, 2009, it was clearly indicated that claims 2 and 3 recite further limitations with respect to the diffusion barrier. Regarding the Examiner’s indication that there is no antecedent basis for “the outlet opening of the processed perform (claim 3)”, Applicants note that claim 3 depends from claim 1 and claim 1 recites “drawing the portion of the preform which has been processed into the predetermined shape is from the furnace through an outlet opening”, and thus, provides sufficient antecedent

basis for the phrase in claim 3. Notwithstanding the above, claim 3 is amended herein to recite “wherein the diffusion barrier is established in the inlet opening, in the inert gas feed and in the outlet opening of the furnace”, thereby further clarifying the claimed invention.

The Examiner states that, in claim 4, it is unclear if “the gas flow” is the inert gas flow or some other flow. The Examiner also states that there is no antecedent basis for the phrase, “the total flow” in claims 4 and 7.

The phrase “the gas flow” is protective gas flow, which can be inert or active (see page 7 of the specification). Claims 4 and 7 have been amended accordingly. Claim 4 is further amended to recite that “F stands for the total gas flow that is fed into the furnace”.

Claim 6 is rejected as having “confusing antecedent basis” for the flow and the inert gas.

Claim 6 is amended herein to recite “wherein the flow of inert gas is introduced into the outlet opening, the flow being is at least equal to the flow of gas caused by a chimney effect through the inlet opening, preventing unwanted suction of ambient air into furnace through outlet opening due to chimney effect.

Claim 7 is rejected as lacking antecedent basis for “the gas distribution”, “the purge of flow” or “the intermittent space”.

Claim 7 is amended herein to recite “the outlet opening of the furnace” for clarity. Claim 7 is further amended to recite “C3 stands for a combined conductance of flow routes from furnace to ambient space other than inlet opening or outlet opening”.

In claim 10, the Examiner states that there is no antecedent basis for the phrase, “the flow of gas caused by the chimney effect” or for “the chimney effect”.

Claim 10 is amended herein to depend from claim 6, which recites “the flow of gas caused by a chimney effect”, and thus, provides sufficient antecedent basis for the phrase in claim 10.

In claim 11, the Examiner states that there is confusing antecedent basis for “shape” and that the term “like” is confusing.

In response, claim 11 is amended to recite that “the glass preform is subjected to tensile drawing in order to stretch the preform for post-processing”.

In claim 13, the Examiner states that there is no antecedent basis for “the clearance” and “the exterior diameter”. Further, the Examiner states that the recitation of “the clearance is 0.1 – 10 mm” is unclear as to whether the clearance starts at 0.1 and increases to 10 mm or whether it is between 0.1 and 10 mm, or something else.

Applicants traverse this aspect of the rejection.

In the Amendment filed June 26, 2009, claim 13 was amended to recite “the clearance between an exterior diameter of the glass preform and an inlet opening diameter”. Therefore, the Examiner’s position that the phrase is unclear is not understood.

Regarding the Examiner’s indication that there is no antecedent basis for “the clearance”, Applicants note that a person having ordinary skill in the art is able to ascertain the phrase “the clearance” upon reviewing claim 13 in its entirety. Notwithstanding the above, claim 13 has been amended to recite “the clearance distance”. Further, it is clear that the clearance is between 0.1 and 10 mm and the claim has been amended for clarity.

In claim 14, the Examiner states that there is confusing antecedent basis for “barrier flow”.

The “barrier flow” in claim 14 refers to “a barrier flow of inert gas in at least one opening selected from said inlet opening and said outlet opening of the furnace, said barrier flow having a direction of flow, which is generally opposite to the direction of the impurities” as recited in claim 1. Claim 14 has been amended accordingly for clarity.

In view of the above, Applicants respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph.

## **II. Response to Rejection under 35 U.S.C. § 102**

Claims 1-8, 11-13 and 16 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 6,192,715 (Orita).

Applicants traverse the rejection for the reasons of record and additionally as follows.

Applicants maintain that Orita does not expressly or inherently disclose or suggest each and every element of the presently claimed invention.

As recited in claim 1, the presently claimed invention relates to establishing a diffusion barrier against an inflow of impurities from the ambient air, driven by diffusion, by generating a barrier flow of inert gas in at least one opening selected from the inlet opening and the outlet opening of the furnace, and the barrier flow having a direction of flow, which is generally opposite to the direction of the impurities.

According to the present invention, any unwanted gaseous molecule contents can be kept outside the furnace by using a flow of inert gas to form a diffusion barrier (sealing condition).

The content of residual is accepted to correspond essentially to (e.g., being slightly in excess of) the level of impurity of the protective gas, for example, and a sealing flow opposite to the diffusion is arranged by means of the sealing flow, forming a sufficient diffusion seal by means

of the sealing distance used (see pages 8-9 of the present specification). In order to do this, the presently claimed invention comprises a furnace assembly having aggregates (which use flows and structural parts that are designed so that the distribution of gases is taken into account in the proportions of conductances), non-contacting sealing by means of a diffusion barrier (sealing condition), possible flow rate and direction of flow over the aggregate conductances (provided by the chimney effect), and combining the above-mentioned flows to define sealing distances needed.

Various methods of calculating the number of flows, of calculating the chimney effect, of calculating the flow rates and direction in the aggregates in order to achieve the effects of the presently claimed invention are disclosed in the specification.

In contrast, Orita discloses a furnace comprising a chamber, controller and pump as a means to control entry of ambient gas (see col. 8, lines 21-24). In order to do this, Orita manipulates the structural dimensions of the chamber (the chamber has a first and second hole formed to satisfy  $(L1/D1) < (L2/D2)$ , where L1 is the length of the first hole, D1 is the cross sectional area of the first hole, L2 is the length of the second hole, and D2 is the cross sectional length of the second hole); and employs a controller and pump to maintain a differential pressure between the inner space and outside of the furnace in the range of 0.2 and 20 Pa.

Orita is completely silent regarding establishing a diffusion barrier against an inflow of impurities from the ambient air, driven by diffusion, by generating a barrier flow of inert gas in at least one opening of the furnace as recited in claim 1. Additionally, Orita does not disclose, teach or suggest calculating the number of flows, calculating the chimney effect, calculating the

flow rates, direction in the aggregates, etc., as in the present invention to produce glass preforms for manufacture of optical fibers.

Since the presently claimed invention and Orita are completely different in their scope and features, it can not be said that the missing descriptive matter is necessarily present in Orita, as the Examiner suggests. Inherency may not be established by probabilities or possibilities, and thus, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result of the characteristic.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the anticipation rejection based on Orita.

### **III. Response to Claim Rejection - 35 U.S.C. § 103**

Claims 9-10, 14 and 15 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Orita.

Applicants traverse the rejection and submit that claims 9-10 and 14-15 ultimately depend from claim 1 and are not rendered obvious by Orita for the reasons set forth above. Namely, Orita does not disclose all elements of claim 1 and there is no apparent reason to modify the disclosure of Orita with a reasonable expectation of success in arriving at the claimed invention because the presently claimed invention and Orita are completely different in their scope and features.

### **IV. Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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**23373**

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